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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

HARPER, V PAUL

ART UNIT

PAPER NUMBER

2626

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 10/674,945	Applicant(s) YOUN, JEONGNAM	
	Examiner V. Paul Harper	Art Unit 2654	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-25 is/are pending in the application.
 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1,2,6,8,9,12-15,18,19,22,23 and 25 is/are rejected.
- 7) ☒ Claim(s) 3-5,7,10,11,16,17,20,21 and 24 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____ | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

1. The Examiner has considered the references listed in the Information Disclosure Statement dated 10/07/2003. A copy of the Information Disclosure Statement is attached to this office action.

Claim Rejections - 35 USC § 101

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2. Claims 1-21 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. To aid in the interpretation of the following rejections reference is made to the Interim Guidelines (a copy of which can be obtained at the uspto website), hereinafter referred to as Guidelines)

Regarding claim 1 (and claims that depend from claim 1), this claim preempts an abstract idea (an algorithm) without a tangible result (Guidelines pp. 23 and 20) (i.e, what is taught is a method for manipulating bits with no clear application indicated).

Regarding claims 14, 18 (and claims that depend from these claims 14 and 18), these claims describe non-statutory computer related subject matter (Guidelines p. 50). The use of more conventional language such as "a computer program stored on a computer-readable medium for ..." should satisfy this requirement.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 1, 2, 6, 8, 9, 12-14, 15, 18, 19, 22, 23 and 25 are rejected under 35 U.S.C. 102(e) as being anticipated by Lopez-Estrada et al. (U.S. Patent Application Publication US 2003/0083867), hereinafter referred to as Lopez-Estrada.

Regarding **claim 1**, Lopez-Estrada teaches a method for efficient rate control in audio encoding. Lopez-Estrada's teachings include the following:

- an initial common scale factor (Fig. 8, item 812; also Fig. 2, item 210, global_gain corresponds to common scale factor);
- computing an initial increment using the initial number of bits and a target number of bits (η 's [0037]-[0046], in particular η [0042] and equation 16; also Fig. 2, item 225; Fig. 8, items 810 and 812);
- incrementing the initial common scale factor by the initial increment (Fig. 8, item 832 where initial values will be used for the initial increment; also Fig. 2, item 240);
- adjusting the incremented common scale factor based on the target number of bits (Fig. 8, ggn= (target-bits; also Fig. 2, loop to item 225);

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- computing a plurality of individual scale factors based on the adjusted common scale factor and allowed distortion (Fig. 3, items 315, 320, 325, and 330, calculate and measure distortion, amplify band); and
- if a current number of bits associated with the plurality of individual scale factors exceeds the target number of bits, modifying the adjusted common scale factor until a resulting number of bits no longer exceeds the target number of bits (Fig. 8, items 818, 824; also Fig. 2, item 235).

Regarding **claim 2**, Lopez-Estrada teaches everything claimed, as applied above (see claim 1). In addition, Lopez-Estrada teaches “determining the initial common scale factor.” (Fig. 8, items 810, 812; ¶’s [0062], also Fig. 2, item 210).

Regarding **claim 6**, Lopez-Estrada teaches everything claimed, as applied above (see claim 1). In addition, Lopez-Estrada teaches:

- quantizing spectral data within a frame using the incremented common scale factor (Fig. 8, items 814 and 820);
- determining that quantized spectral data is valid (Fig. 8, item 824);
- determining a current number of bits associated with the incremented common scale factor (Fig. 8, item 822);
- if the current number of bits exceeds the target number of bits, varying the incremented common scale factor in a decrease bit order (Fig. 8, item 824, No, then items 828 and 832); and

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- if the current number of bits does not exceed the target number of bits, varying the incremented common scale factor in an increase bit order (Fig. 8, items 830 and 832).

Regarding **claim 8**, Lopez-Estrada teaches everything claimed, as applied above (see claim 1). In addition, Lopez-Estrada teaches “computing a plurality of individual scale factors comprises: iteratively adjusting each of the plurality of individual scale factors until an energy error associated with the adjusted each of the plurality of individual scale factors is below the allowed distortion” (Fig. 3, items 315, 320, 326 and 330).

Regarding **claim 9**, Lopez-Estrada teaches everything claimed, as applied above (see claim 8). In addition, Lopez-Estrada teaches:

- incrementing each of the plurality of individual scale factors by a current increment (Fig. 3, item 330; ¶[0016] amplify the respective band by a predetermined factor);
- calculating an energy error associated with the incremented individual scale factor (Fig. 3, item 320, calculate the distortion);
- determining a type of the calculated energy error (¶[0016] distortion is compared to distortion criteria);
- setting the current increment to a first constant if the calculated energy error is of a first type; setting the current increment to a second constant if the calculated energy error is of a second type (Fig. 3, amplify or not depending upon relationship of distortion to criteria); and

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- determining whether the calculated energy error is below the allowed distortion (Fig. 3, item 325).

Regarding **claim 12**, Lopez-Estrada teaches everything claimed, as applied above (see claim 1). In addition, Lopez-Estrada teaches:

- determining that the current number of bits associated with the plurality of individual scale factors exceeds the target number of bits (Fig. 8, items 818 and 824; also Fig. 2, item 235);
- adding an offset value to the adjusted common scale factor to compute a modified common scale factor (Fig. 8, item 832; also Fig. 2, item 240); and
- calculating the resulting number of bits associated with the plurality of individual scale factors and the modified common scale factor (Fig. 3, item 315, ... back to rate control loop, item 310).

Regarding **claim 13**, Lopez-Estrada teaches everything claimed, as applied above (see claim 12). In addition, Lopez-Estrada teaches “refraining from recomputing the plurality of individual scale factors when the adjusted common scale factor is modified” (Fig. 3, note the after step 310 [which includes adjustments to the `global_gain`] step 315 is performed [adjusting the scalefactors for the bands]).

Regarding **claim 14**, this claim has limitations similar to claim 1 and is rejected for the same reasons.

Regarding **claim 15**, this claim has limitations similar to claim 3 and is rejected for the same reasons.

Regarding **claim 18**, this claim has limitations similar to claim 1 and is rejected for the same reasons.

Regarding **claim 19**, this claim has limitations similar to claim 2 and is rejected for the same reasons.

Regarding **claim 22**, Lopez-Estrada teaches a method for efficient rate control in audio encoding. Lopez-Estrada's teachings include the following:

- a Huffman encoding module to determine an initial number of bits associated with an initial common scale factor (¶'s [0013] and [0015], Huffman encoder, Fig. 2, item 225; Fig. 8, items 816, 822).

The remaining limitations are similar to those found in claim 1 and are rejected for the same reasons.

Regarding **claim 23**, this claim has limitations similar to claim 2 and is rejected for the same reasons.

Regarding **claim 25**, this claim has limitations similar to claim 1 and is rejected for the same reasons.

Allowable Subject Matter

4. Claims 3-5, 7, 10, 11, 16, 17, 20, 21 and 24 are objected to as being dependent upon a rejected base claim, but would be allowable (assuming the 101 rejections given in ¶¶1 is overcome where applicable) if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 3, 16, 20, and 24, Lopez-Estrada teaches a method for efficient rate control in audio encoding, but Lopez-Estrada does not specifically teach that determining the initial common scale factor comprises selecting a spectral coefficient of a maximum value within a frame; if the maximum spectral coefficient is equal to zero, setting the initial common scale factor to 30; and if the maximum spectral coefficient is not equal to zero, setting the initial common scale factor to a prior common scale factor.

Regarding claim 5, Lopez-Estrada teaches a method for efficient rate control in audio encoding, but Lopez-Estrada does not specifically teach that the initial increment is computed using an expression $initial_increment = 10 * (initial_bits - target_bits) / target_bits$, wherein *initial_increment* is the initial increment, *initial_bits* is the initial number of bits, and *target_bits* is the target number of bits.

Regarding claim 7, Lopez-Estrada teaches a method for efficient rate control in audio encoding, but Lopez-Estrada does not specifically teach that the incremented common scale factor is varied until a current increment is equal to zero.

Regarding claim 10, Lopez-Estrada teaches a method for efficient rate control in audio encoding, but Lopez-Estrada does not specifically teach the indicated use of the equations as stated in claim 12.

Citation of Pertinent Art

5. The following prior art made of record but not relied upon is considered pertinent to the applicant's disclosure:

- Boykin et al. (US Patent Application Publication 2003/0079222 A1) disclose a system for distributing perceptually encrypted encode files of music and movies, which includes a Huffman encoder (see ¶[0045]).
- Subramaniam et al. (US Patent 6,950,794 B1) disclose a system for feedforward prediction of scalefactors based on allowable distortion for noise shaping in psychoacoustic-based compression (see columns 4 and 7).
- Smithers et al. ("Increased efficiency MPEG-2 AAC Encoding" Audio Engineering Society 111th Convention, New York, NY. September 21-24, 2001) describes a quantizer that modifies a global gain factor and individual scalefactors for the bands (§ 5.0).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to V. Paul Harper whose telephone number is (571) 272-7605. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Hudspeth can be reached on (571) 272-7843. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

3/29/2006

V. Paul Harper
Patent Examiner
Art Unit 2626

A handwritten signature in black ink, appearing to read "V. Paul Harper", is written over the printed name and title.